



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,003	05/05/2005	Nobuyuki Miyaki	271877US0PCT	1366
22850	7590	06/05/2006	EXAMINER	
OBLÓN, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			TESKIN, FRED M	
			ART UNIT	PAPER NUMBER

1713

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/534,003

Applicant(s)

MIYAKI ET AL.

Examiner

Fred M. Teskin

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1- 4, 6, 9-16 is/are rejected.
- 7) ☒ Claim(s) 5 and 7-9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>022706</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1713

The Reply of February 27, 2006 has been entered. Claims 1-16 are currently pending and under examination.

The objections set forth in the prior Office action have been obviated by appropriate amendment of the involved claims and the specification.

The prior art rejections based on Kurosawa et al have been reconsidered and are withdrawn in view of the amendment deleting "vinylene" from the definition of X<sup>1</sup> in claim 1 and applicants' arguments, see page 10 of said Reply. However, upon further consideration, new grounds of rejection are made as detailed below.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 9 is objected to because of the following informalities: a typographical error is noted in line 3, i.e., "stuructural". Appropriate correction is required.

Claims 4 and 9-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the following grounds of indefiniteness apply to the indicated claims.

Art Unit: 1713

(A) Claims 4, 9 and 12 are ambiguous as to the scope of  $X^1$ . Claims 4 and 12 each call for "at least 90 mol% of  $X^1$  in the general formula (I) ... are ethylene groups," and thus purport to cover structures wherein as much as 10 mol% of  $X^1$  is an entity other than ethylene. Claim 9 similarly calls for the hydrogenation rate of the vinylene group to be "at least 90%." This language is inconsistent with, and conceivably broader than, the base claim: claim 1 clearly states that  $X^1$  in the general formula (I) "means an ethylene group". In view of this definition, it is unclear how  $X^1$  can be anything other than ethylene. If, for example, claims 4, 9 and 12 are intended to allow for up to 10 mol% of  $X^1$  to be vinylene, they are improper dependent claims as this subject matter has been deleted from the base claim. Clarification and appropriate correction are required.

(B) Claim 9 is confusing and technically inaccurate in reciting a "monomer having a structural unit (I) represented by the general formula (I)". The structural unit (I) and general formula (I), as depicted in claim 1, represent the *ring-opened* polymeric unit, not the monomer precursor.

(C) Claim 9 provides the limitation to "the vinylene groups". There is insufficient antecedent basis for this limitation in the claims. Indeed, the term "vinylene" has been deleted from claim 1, on which claim 9 depends.

(D) Claims 10-16 are indefinite as inaccurate in the recitation "The ring-opened polynorbornene according to claim 9," inasmuch as claim 9 is drawn to a *process* not a product. Further, it is unclear whether the reference to "[t]he ring-opened

Art Unit: 1713

polynorbornene" refers to the intermediate ring-opened reaction product or the final *hydrogenated* product. Clarification and appropriate correction are required.

Claims 1, 6, 9 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5115037 to Asrar.

Claim 1 is drawn to a ring-opened polynorbornene comprising a structural unit (I) represented by the general formula (I), wherein  $X^1$  means an ethylene group and  $R^3$  represents a group represented by the general formulae (I-1) or (I-2).

Claim 9 is drawn to a process for producing a hydrogenated ring-opened polynorbornene of claim 1, which comprises the step of ring-opening reaction and the step of hydrogenation of the product of the former step wherein the hydrogenation rate of the vinylene groups is at least 90%.

Per the recited formulae (I) and (I-1), claims 1, 6, 9 and 14 are readable on ring-opened polynorbornene homopolymer comprising a structural unit wherein  $X^1$  is ethylene,  $R^1$  and  $R^2$  are hydrogen and  $R^3$  is o-fluorophenyl or o-chlorophenyl. Such a ring-opened polynorbornene homopolymer is described in Asrar, see Example 2 (cols. 3-4). This Example repeats the procedure of Example 1 of Asrar, wherein an unsaturated norbornene dicarboximide homopolymer is hydrogenated and the recovered polymer characterized as "98 % hydrogenated" (col. 3, ll. 21-26), in compliance with claim 9. Moreover, the hydrogenated products of Asrar are said to have the structural formula depicted in column 1, lines 35+, which meets the terms of

Art Unit: 1713

claim 1 when  $X^1$  and  $R^3$  are ethylene and aryl, respectively;  $R^1$  and  $R^2$  are hydrogen and  $m = n = 0$  in general formula (I).

The description in Asrar of specific embodiments of the subject matter broadly claimed in the indicated claims constitutes a description of the invention for anticipation purposes. See *In re Luckach*, 169 USPQ 795 (CCPA 1971).

Claims 2-4 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asrar.

Asrar differs from claims 2-4 and 10-12 only in that the specifically disclosed polyethylene cyclopentanedicarboximides are homopolymers, and thus lack a structural unit (II) as defined in these claims.

Nevertheless, it would have been obvious to one of ordinary skill in the art to modify the precursor (unhydrogenated) homopolymer of the above-cited examples through copolymerization so as to provide a structural unit (II) as claimed. This is because Asrar expressly provides for the precursor polymer being a homopolymer or a copolymer and, in the case of a copolymer, using "non-imide metathesis polymerizable monomers such as norbornene nitrile" (col. 2, ll. 30-32). Norbornene nitrile is seen to correspond to structural unit (II) as set out in the indicated claims, e.g., claims 2 and 10, when one of  $R^4$  to  $R^7$  is a polar group, the balance are hydrogen atoms and  $t = u = 0$  in general formula (II).

Art Unit: 1713

Applicants' arguments with respect to claims 1-8 have been fully considered but are deemed moot in view of the new grounds of rejection.

Claims 5, 7 and 8 are objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim.

The following is a statement of reasons for the indication of allowable subject matter: A ring-opened polynorbornene having the structural unit (I), wherein in the general formula (I),  $m$  is 0 and  $n$  is 1, per claim 5, is not taught nor fairly suggested in the available prior art; nor is the selection of another substituent group than hydrogen for at least one of  $R^{11}$  and  $R^{18}$  and at least one of  $R^{12}$ ,  $R^{15}$  and  $R^{19}$  (claim 7) or for both  $R^{11}$  and  $R^{18}$  (claim 8) in structural unit (I).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 1713

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FMTeskin/05-30-06

  
**FRED TESKIN**  
**PRIMARY EXAMINER**  
1713